

**DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)**

EVALUATION AREA 4 – FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurements and Analyses

Criterion 4.a.1 - The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates.

According to the ORO's plan/procedures and the extent of play agreement:

- From what location is the field monitoring team to be dispatched?
- What is the equipment and supply inventory for to the field monitoring teams? Consider radiation monitoring instrumentation, air sampling devices, and instrumentation to count air sample components
- How are pre-deployment operational checks made on monitoring instruments?
- What special methods are used for high range instruments?
- Where will teams obtain spare equipment in the event of broken or out of specification instruments?
- What adsorbent is used to collect a radioiodine sample and what is the required sample volume?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Verify inventories of field instruments and supplies.
- Observe operational checks.
- Verify that spare equipment or instruments are obtained for missing, broken, or out of specification items.

DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)

Sub-element 4.a – Plume Phase Field Measurements and Analyses

Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure.

According to the ORO's plan/procedures and the extent of play agreement:

- Who briefs the field monitoring team prior to deployment and what topics are to be covered?
- Who controls the movement of the field teams and the determination of sample location?
- What approach is used to select appropriate sampling locations, pre-designated sampling points or plume traverse (while maintaining specified exposure limits)?
- Which agency's (ORO, licensee, or other) field monitoring teams are assigned the responsibility of obtaining maximum radiation readings in the downwind areas?
- If the ORO teams have this responsibility, what special exposure control mechanisms are used to control exposure and/or dose?
- What agency, if any, other than the ORO is to participate in this demonstration and what limitations or restrictions have been established?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Observe pre-deployment briefing.
- Document all instructions or assignments given to team. Include the time of assignment and the time assignment was completed.
- Obtain copies of chain-of-custody forms, if appropriate.

DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)

Sub-element 4.a – Plume Phase Field Measurements and Analyses

Criterion 4.a.3 - Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media.

According to the ORO's plan/procedures and the extent of play agreement:

- What method is used to establish that the team is actually in the plume and not just in an area with an elevated radiation reading due to shine (cloud or ground)?
- If specified, what is the minimum acceptable ambient radiation reading before a meaningful air sample is to be taken?
- What method is specified to ensure that the plume has not shifted away from the sampling location or has not changed significantly in strength during the air sampling?
- What is the designated background exposure rate that requires moving to a low background area to count air sample media?
- If the field team does not count the air sample media in the field, what system is in place to get the sample media counted?
- How are field measurement results transmitted to the specified location?
- What procedures are used to ensure that samples transferred to other locations are handled in a way to maintain sample integrity? What information is required on chain-of-custody forms?
- What agency, if any, other than the ORO is to participate in this demonstration and what limitations or restrictions have been established?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Document all field team instructions and all measurement results that are transmitted to the appropriate location.
- Document all controller injects.
- Obtain copies of all work sheets completed by the field teams, if appropriate.
- Obtain a copy of any chain-of-custody forms that were completed.

DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)

Sub-element 4.b – Post Plume Phase Field Measurements and Sampling

Criterion 4.b.1 - The field teams demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making.

According to the ORO's plan/procedures and the extent of play agreement:

- How is the area of interest (that impacted by the passing plume) going to be identified?
- If aerial measurements are to be used, what method or procedure will be used to identify the area of interest that is below the detection limit of the aircraft?
- What are the ORO agencies that will supply field teams?
- Which ORO agencies oversee contamination control and exposure for the teams?
- What instruments, equipment, and supplies are required for each type of sampling assignment?
- What are the specified minimum sample sizes to be collected?
- How and when will the results of direct radiation measurements be transmitted to the appropriate location?
- How will the collected samples be transported to a laboratory for analysis?
- What agency, if any, other than the ORO is to participate in this demonstration and what limitations or restrictions have been established?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Document all instructions given to the field team.
- Document all controller injects.
- Document all communications to the field team coordinator.
- Obtain copies of all worksheets completed by the team, including any chain-of-custody forms.

DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)

Sub-element 4.c - Laboratory Operations

Criterion 4.c.1 - The laboratory is capable of performing required radiological analyses to support protective action decisions.

According to the ORO's plan/procedures and the extent of play agreement:

- What laboratory is designated to demonstrate this criterion?
- Which radionuclides, that typically might be released in a reactor accident, does the designated laboratory have the capability to analyze? Does the laboratory have the capability to analyze atypical nuclides such as transuranics or nuclides that might be used by terrorists?
- What is the highest contact radiation reading allowed on any sample that is to be processed by the laboratory, if any?
- If the laboratory lacks the capability to analyze certain radionuclides or receives a sample that exceeds a radiation reading limit, what arrangements are in place to obtain the analysis of these nuclides?
- How and how often are the instruments used in the laboratory calibrated? Are all instrument calibrations traceable to (National Institute of Standards and Technology (NIST) standards? If not, what standard is the basis for the calibrations?
- How are sample stored to reduce the potential for increased background levels in the laboratory?
- How are samples prepared for counting and what contamination control procedures are used during this process?
- How are sample aliquot sizes documented?
- How have the sample count times been modified to account for samples with higher radioisotope levels than normal?
- What sample preservation techniques are to be employed?
- How are chain-of-custody forms processed and sample integrity maintained?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Document all controller injects.
- Document (or obtain copies of) calibration results.

DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)

- Observe sample preparation with particular attention to contamination control and sample aliquot documentation.
- Observe the transmission of analytical results to the appropriate location.